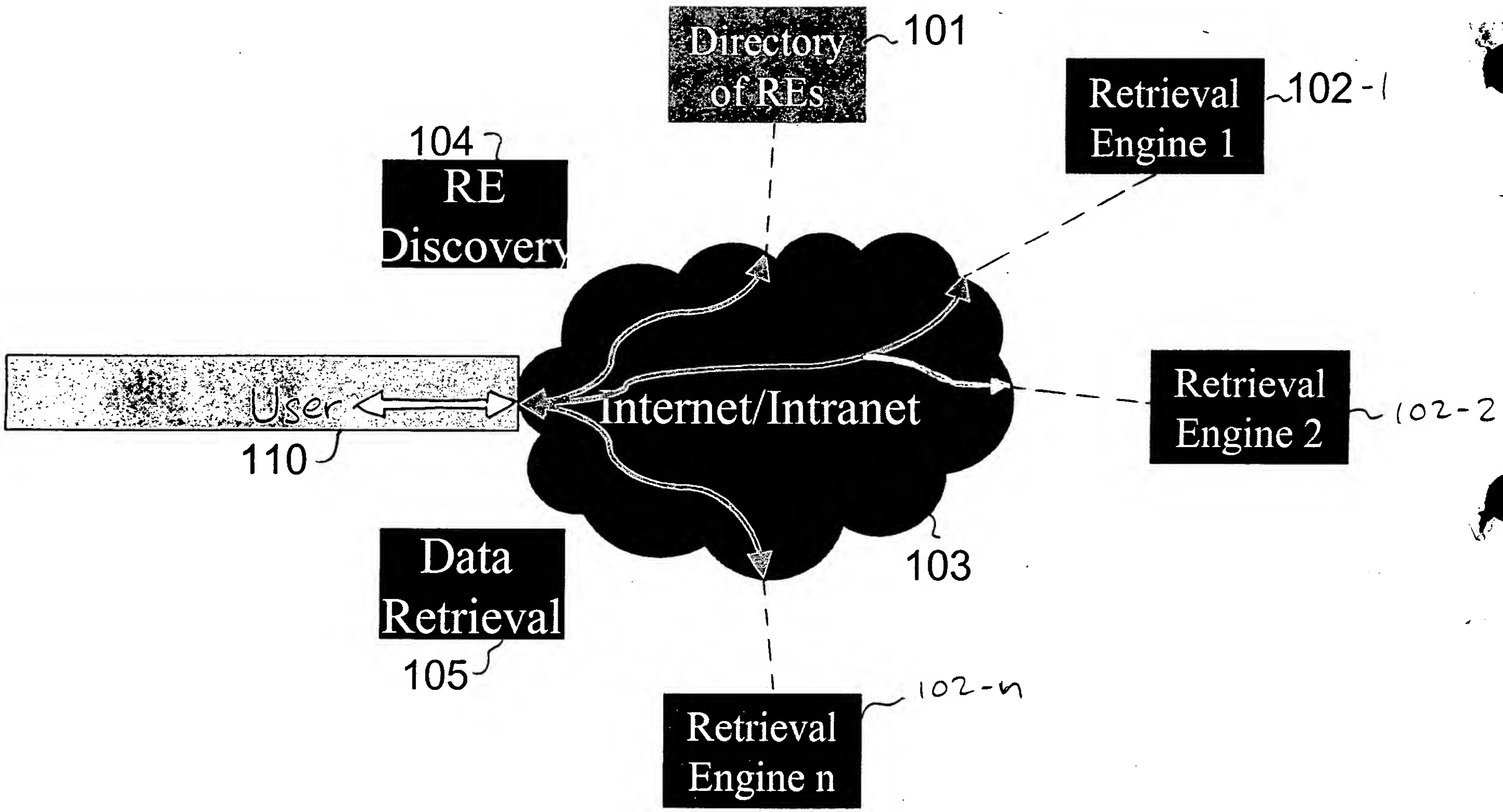
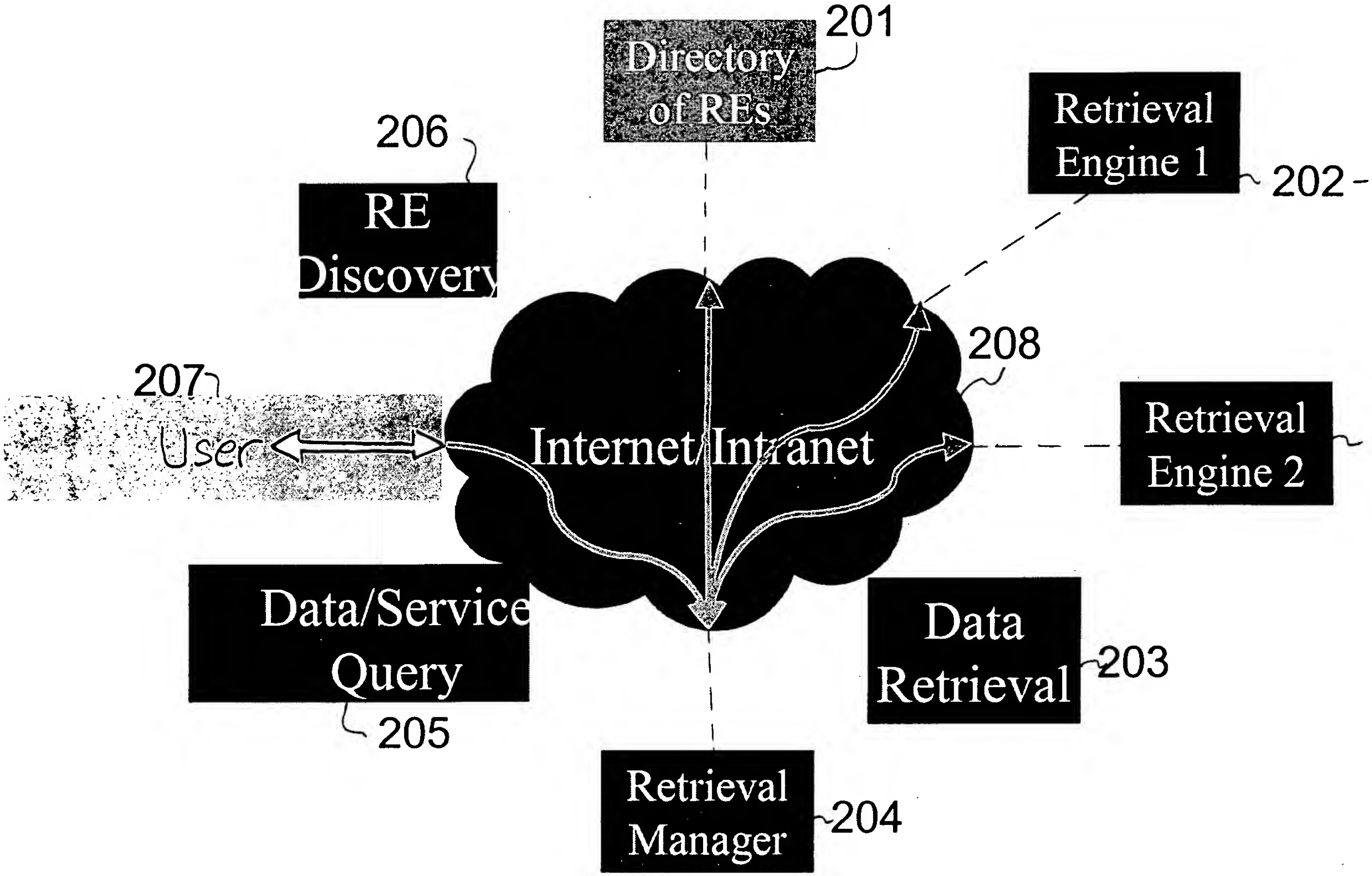
1/21
Bergman et al. (WLE)
YOR9-2000-0205-US1

FIG. 1



2/21
YOR9-2000-0205-US1

FIG. 2



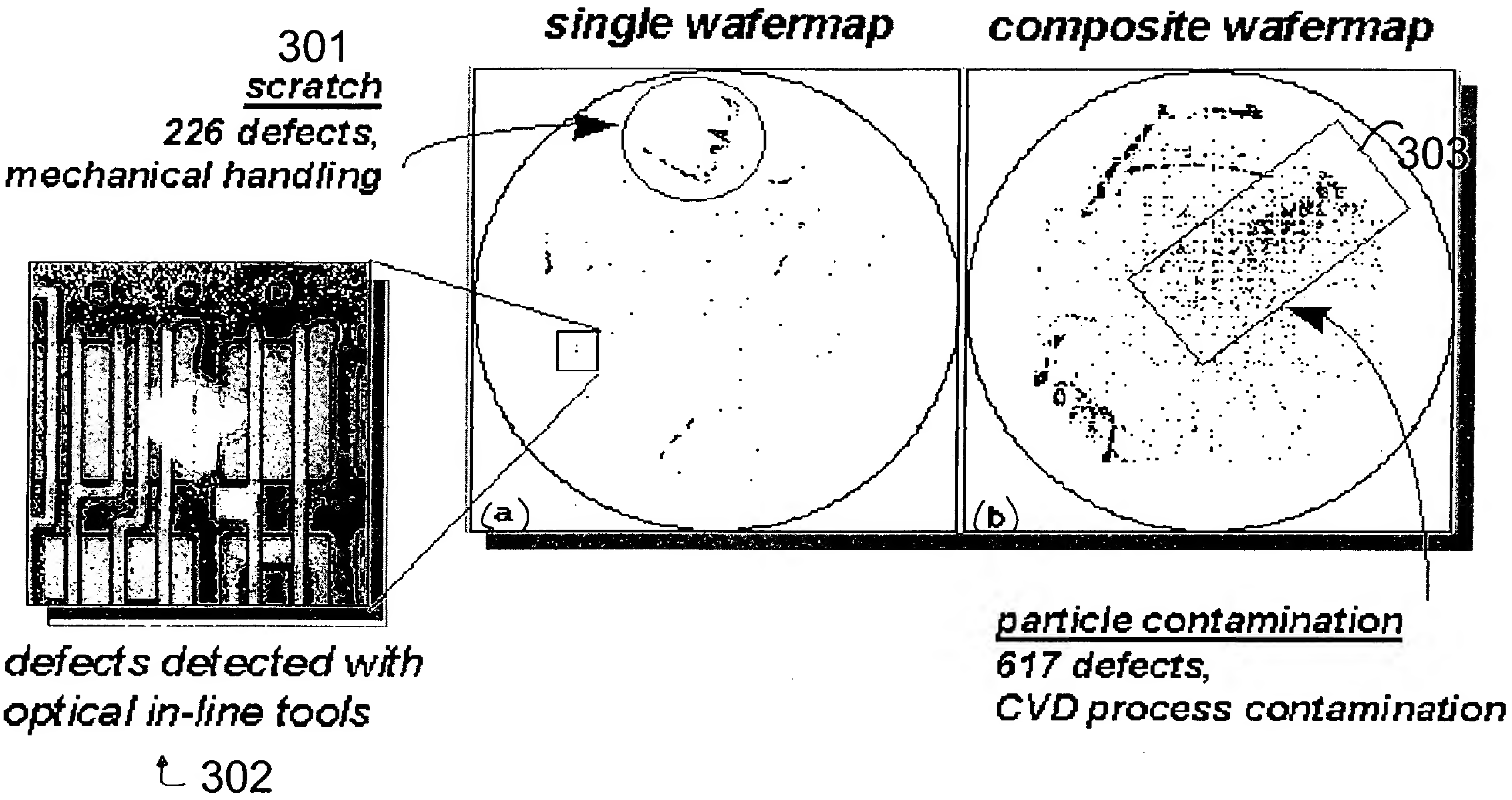

single wafermap
composite wafermap
301
scratch
226 defects,
mechanical handling
(a)
(b)
303
defects detected with
optical in-line tools
302
particle contamination
617 defects,
CVD process contamination

FIG. 3

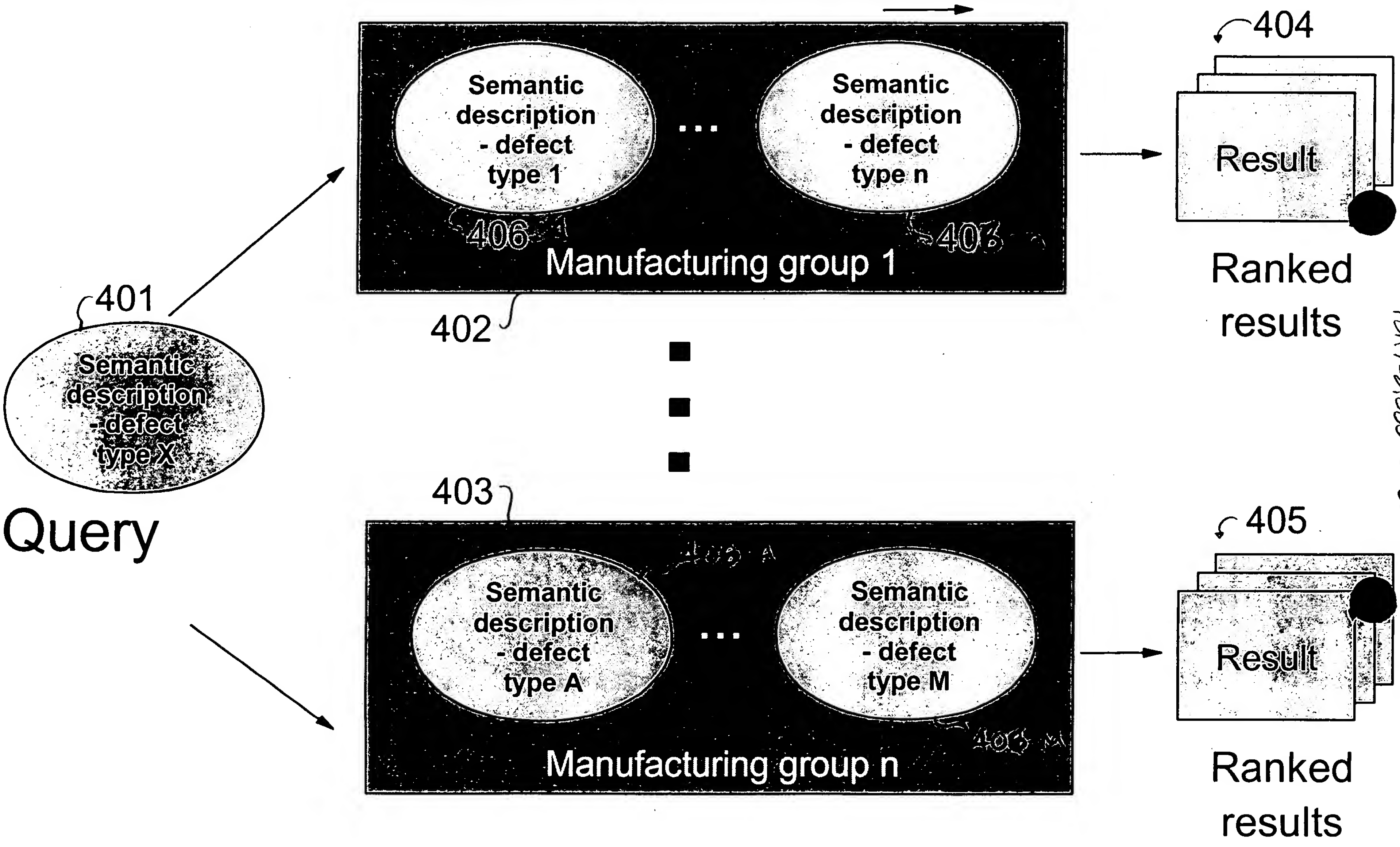

401
Semantic description - defect type X
Query
402
Manufacturing group 1
Semantic description - defect type 1
406 A
Semantic description - defect type n
406
403
Manufacturing group n
Semantic description - defect type A
408 A
Semantic description - defect type M
408 M
404
Result
Ranked results
405
Result
Ranked results

FIG. 4

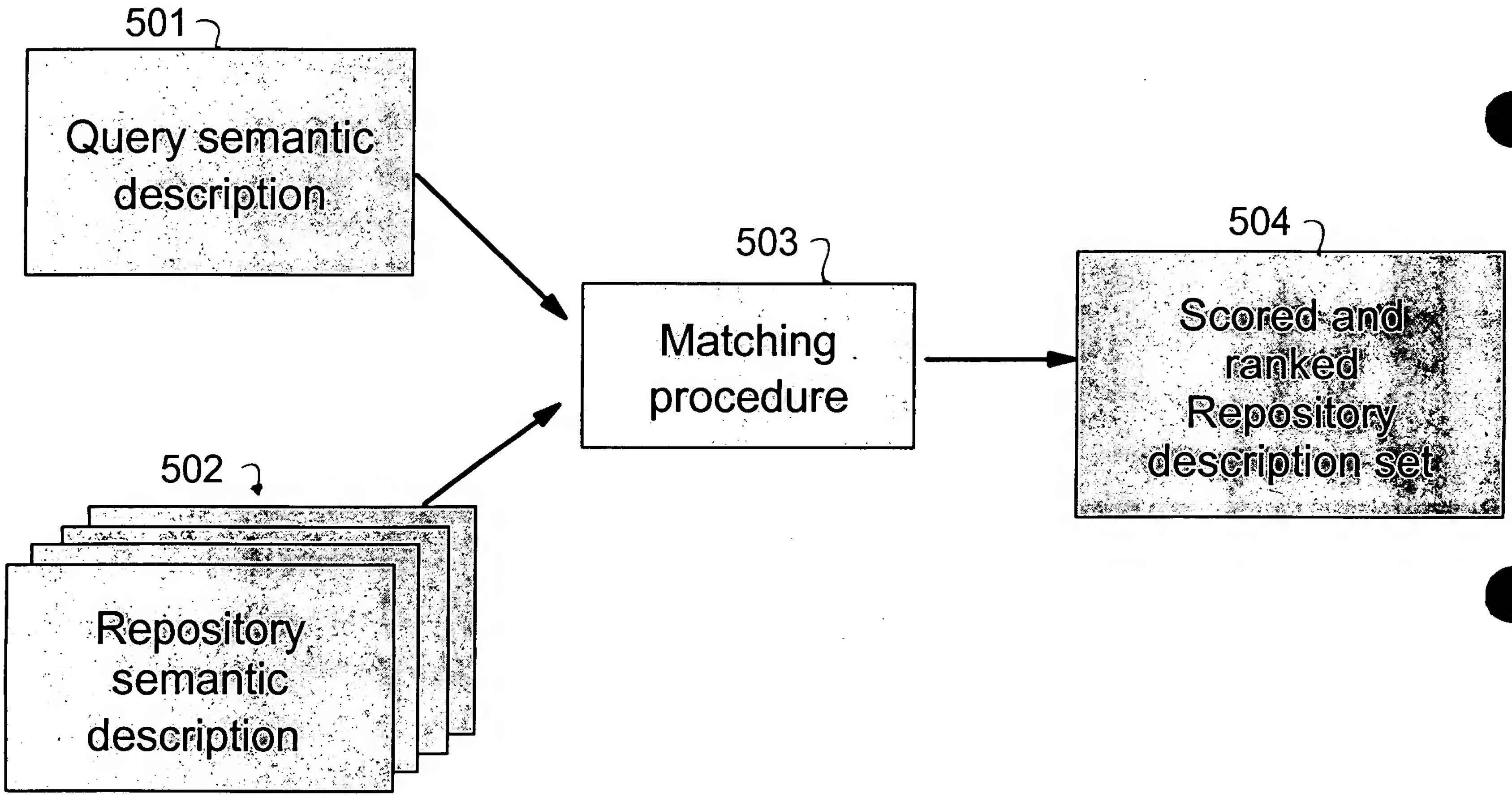

501
Query semantic description
502
Repository semantic description
503
Matching procedure
504
Scored and ranked Repository description set

FIG. 5

09614141.071500

6/21
YOR9-2000-0205-US1

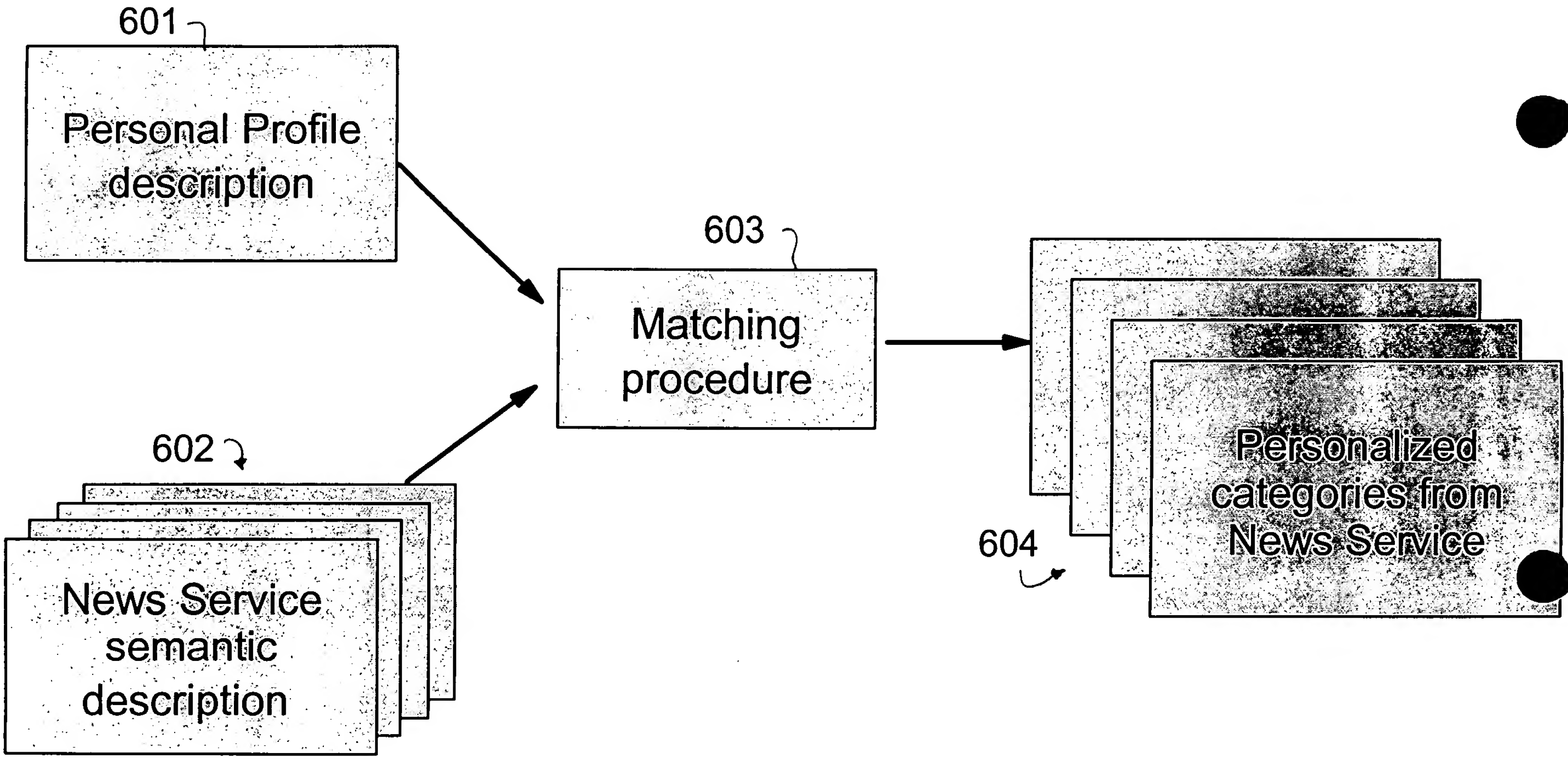
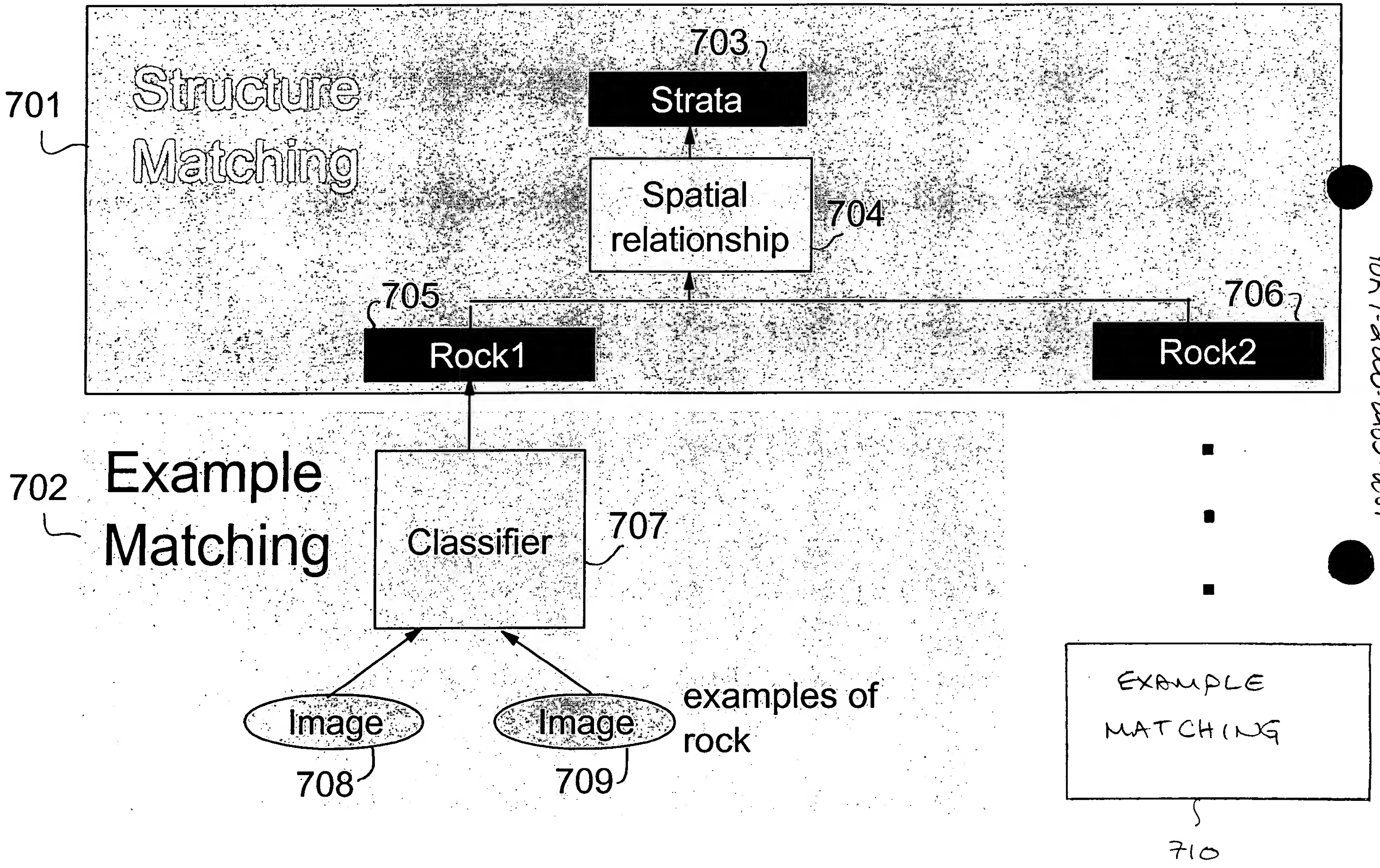


FIG. 6

FIG. 7


701
Structure Matching
703
Strata
Spatial relationship
704
705
706
Rock1
Rock2
702
Example Matching
Classifier
707
Image
Image
examples of rock
708
709
EXAMPLE MATCHING
710

8/21
YOR9-2000-0205-US1

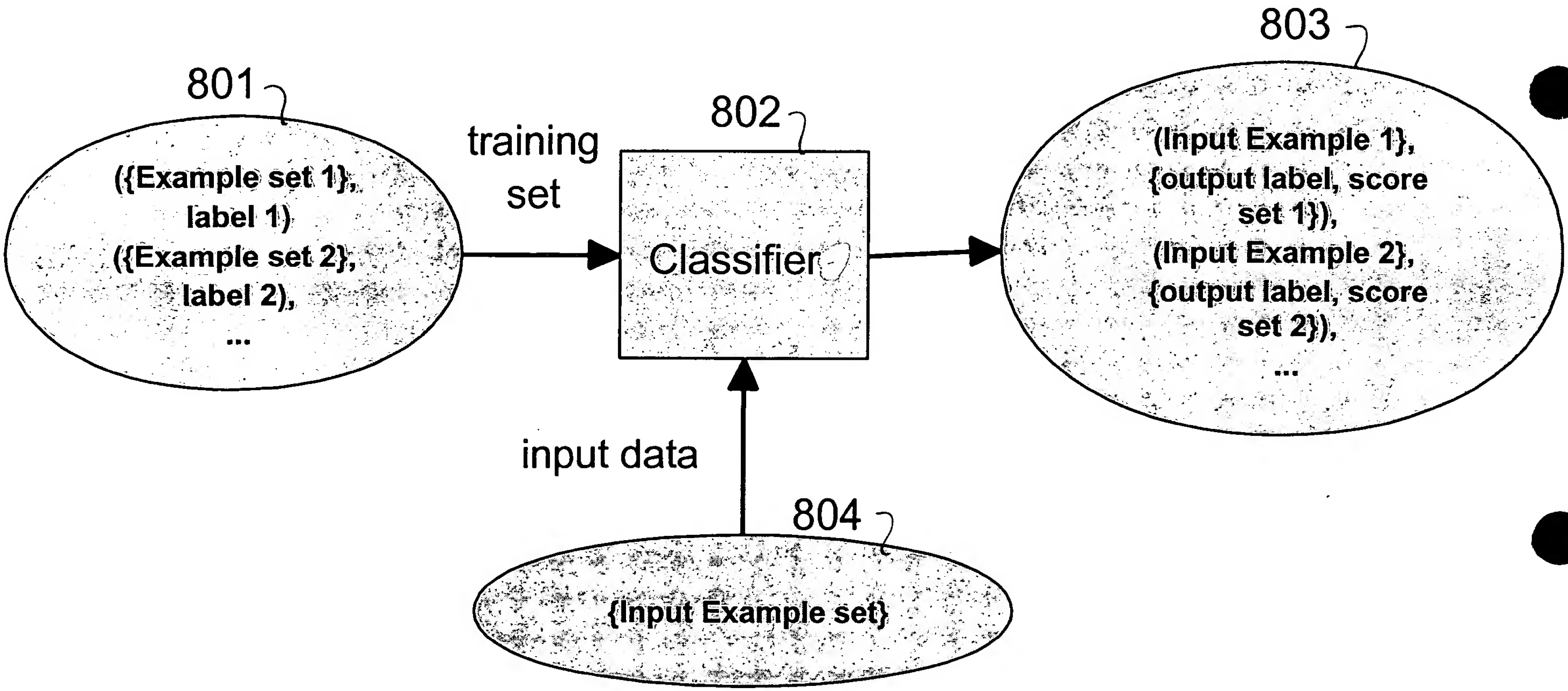
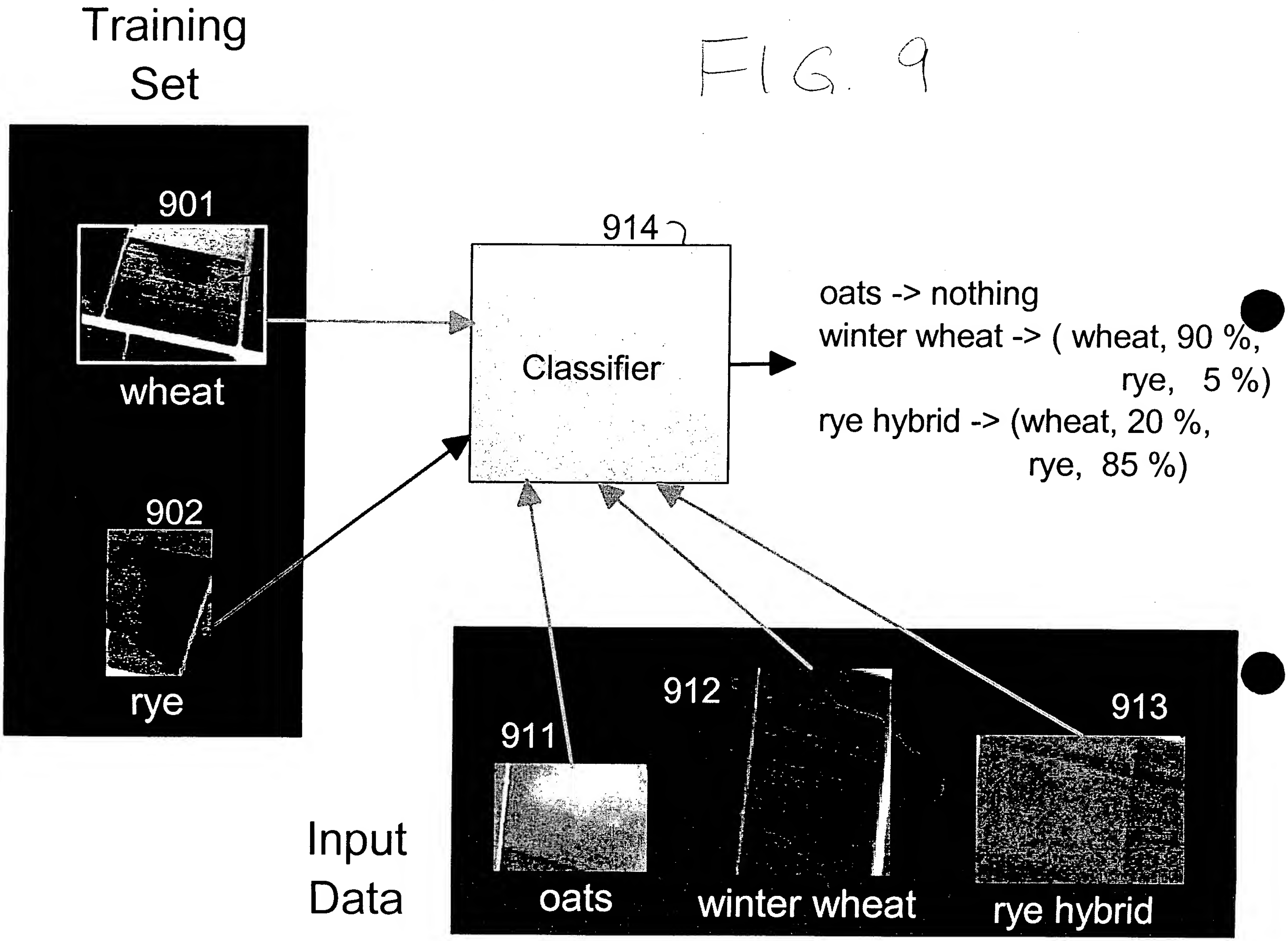


FIG. 8

FIG. 9


Training Set
901
wheat
902
rye
914
Classifier
oats -> nothing
winter wheat -> (wheat, 90 %, rye, 5 %)
rye hybrid -> (wheat, 20 %, rye, 85 %)
Input Data
911
oats
912
winter wheat
913
rye hybrid

10/21
YOR9-2000-0205-US1

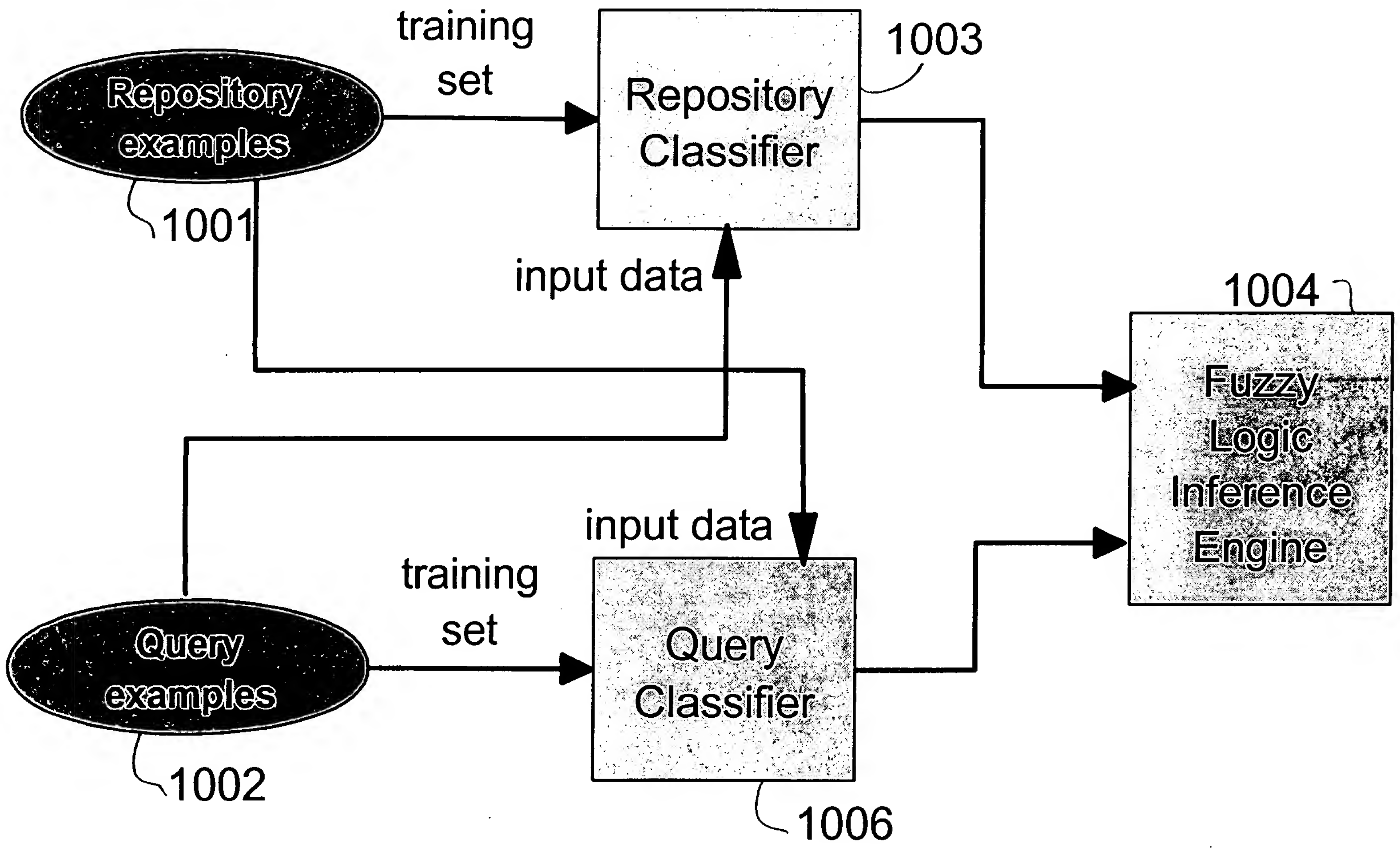


FIG. 10

11/21
YOR9-2000-0205-US1

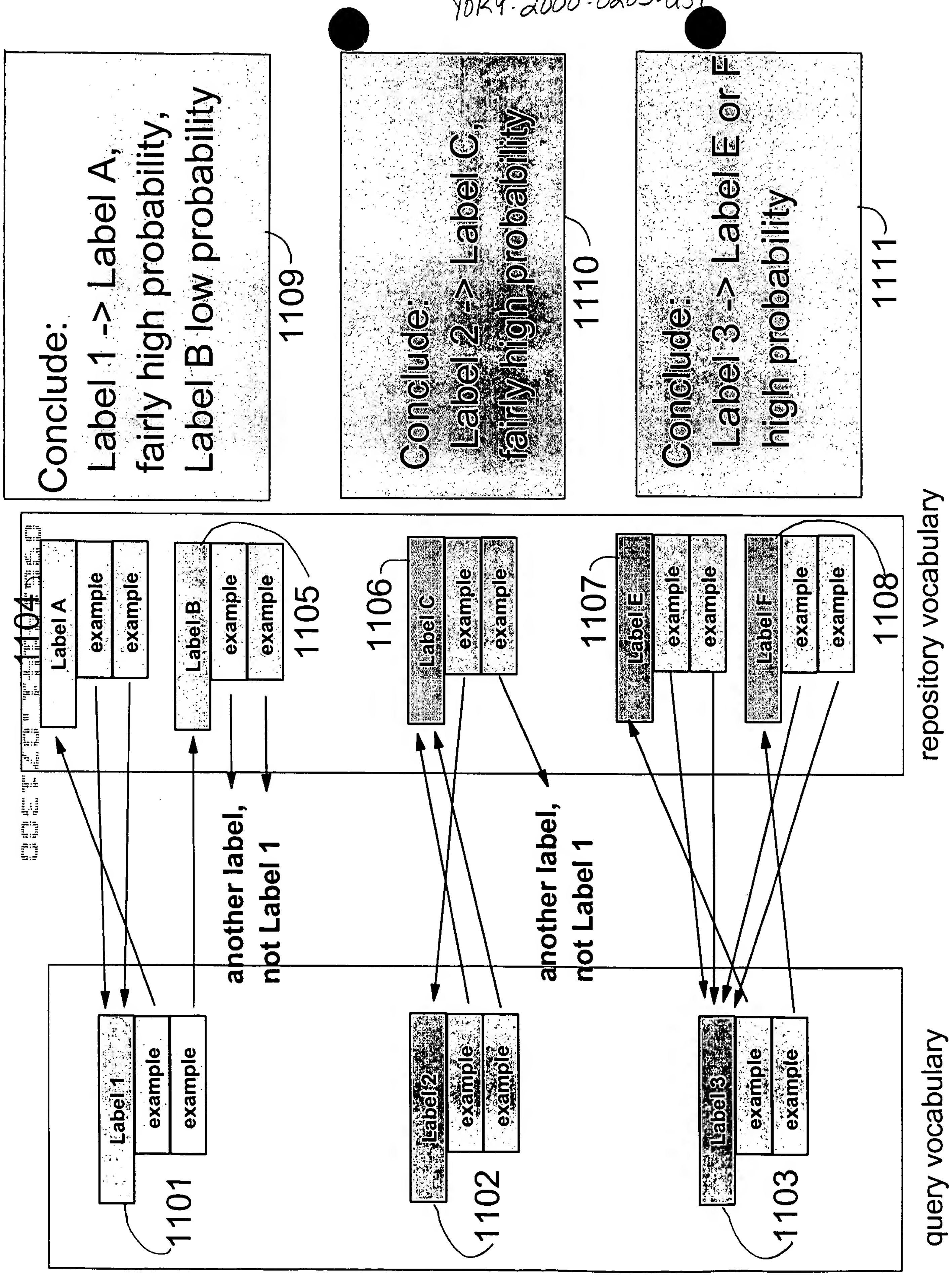


FIG. 11

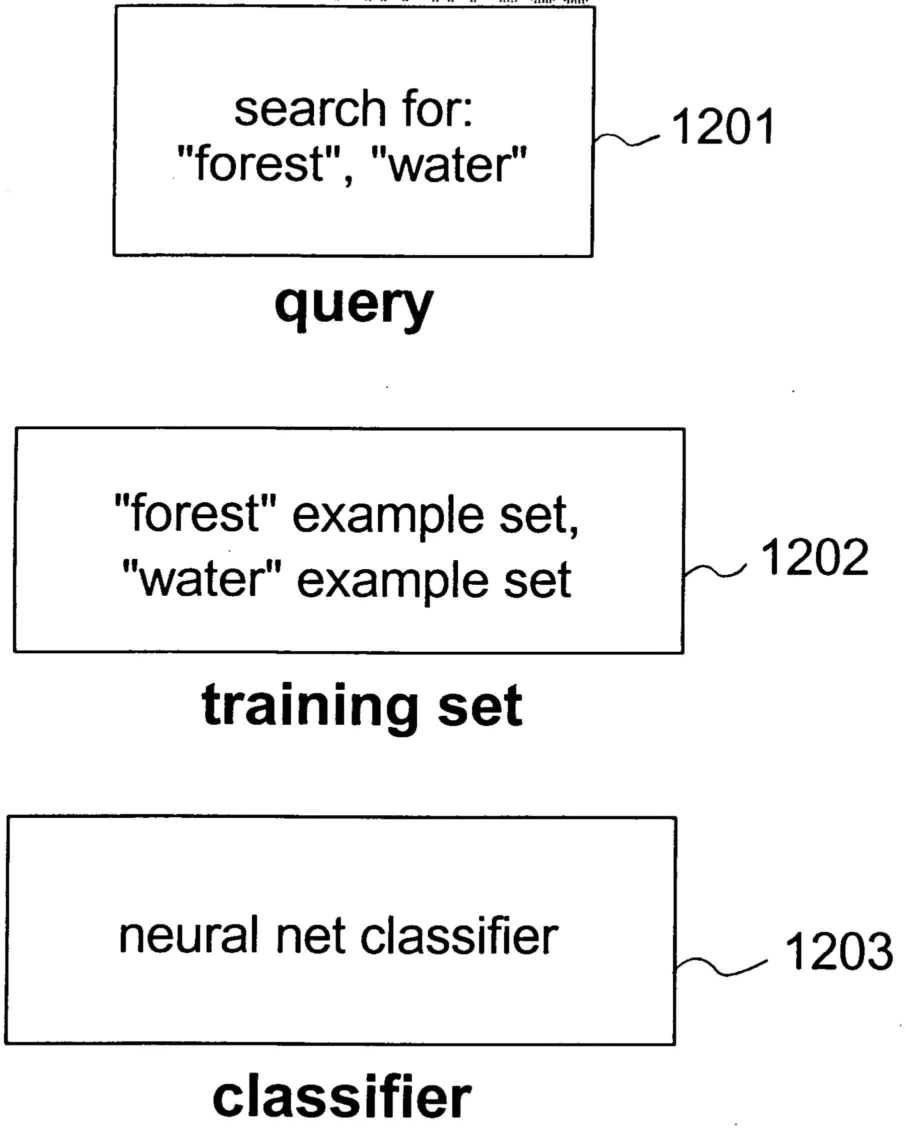

search for:
"forest", "water"
1201
query
"forest" example set,
"water" example set
1202
training set
neural net classifier
1203
classifier

FIG. 12

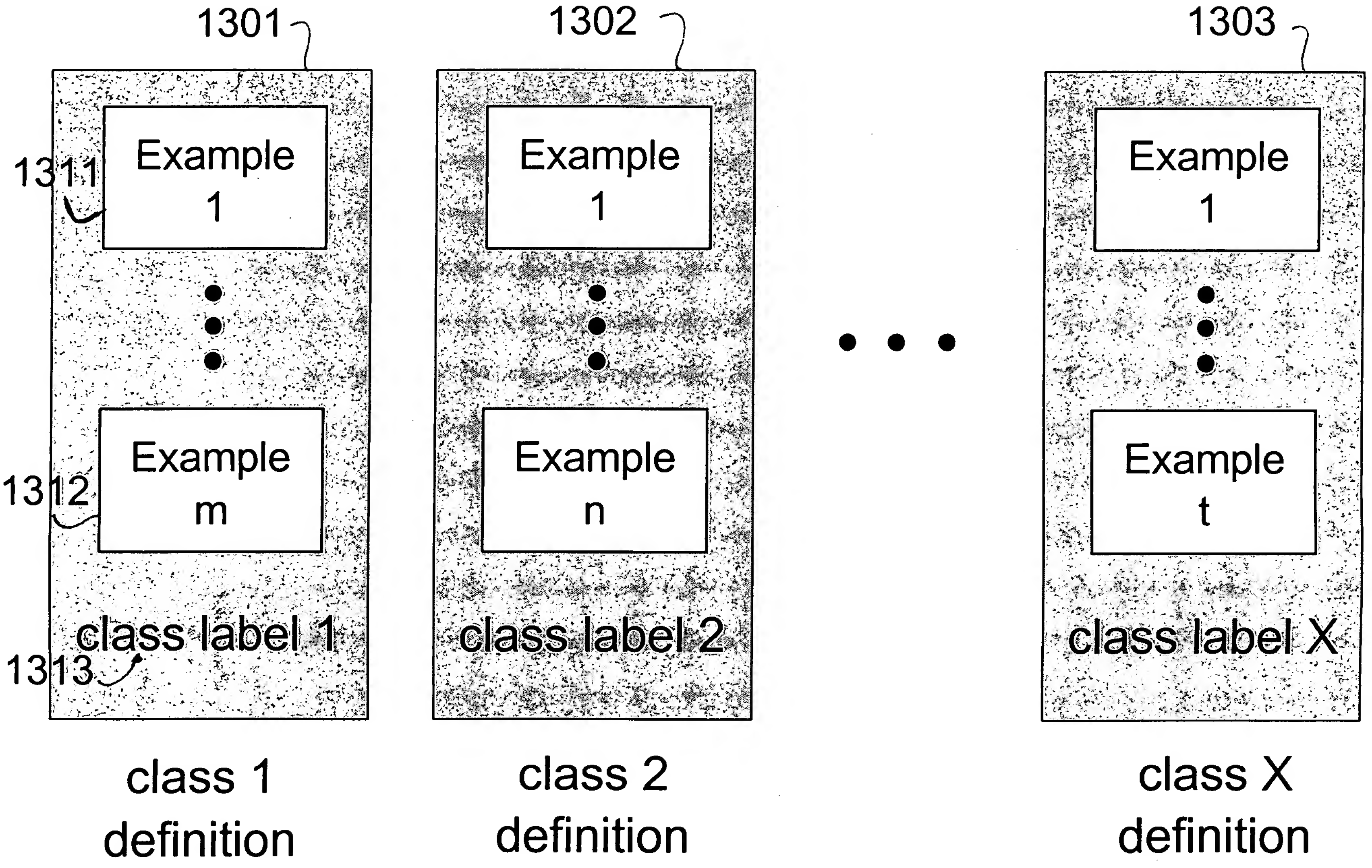

1301
1302
1303
1311
1312
1313
Example 1
Example m
class label 1
Example 1
Example n
class label 2
Example 1
Example t
class label X
class 1 definition
class 2 definition
class X definition

FIG. 13

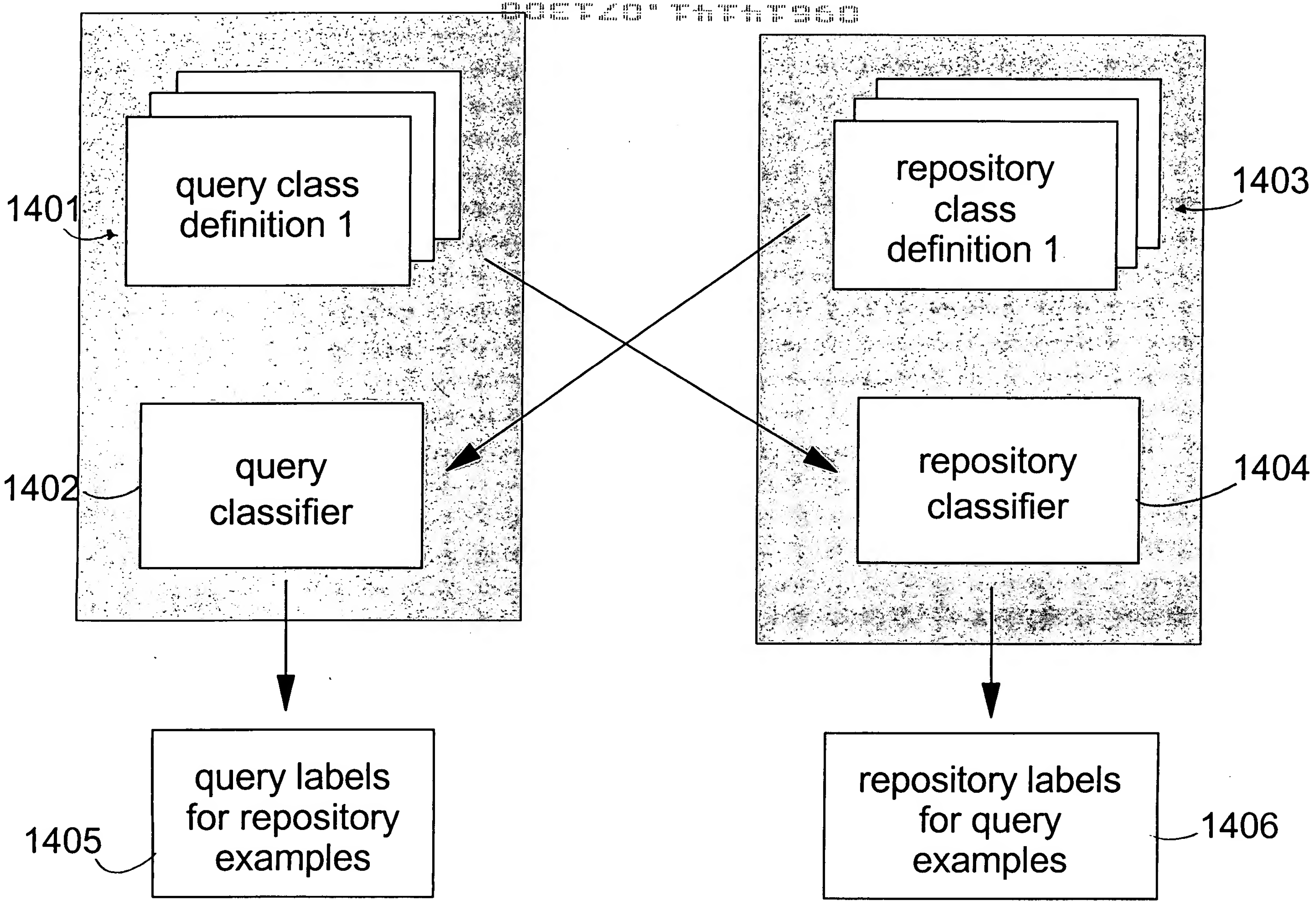
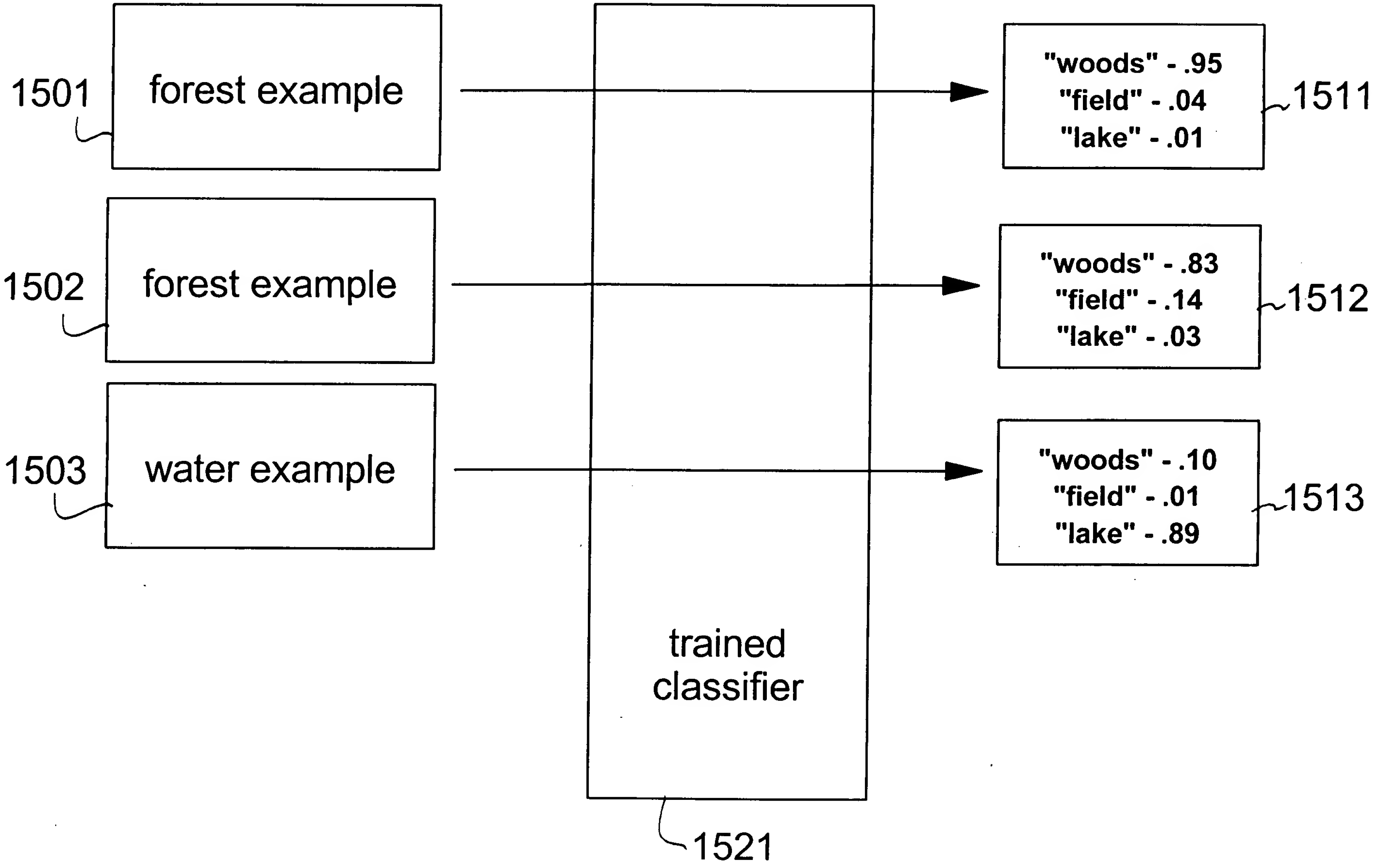

query class definition 1
1401
query classifier
1402
query labels for repository examples
1405
repository class definition 1
1403
repository classifier
1404
repository labels for query examples
1406

FIG. 14

09614141.021500

FIG. 15



15/21
YOR9-2000-0205-US1

09614141 .071300

	Input label	Output label	Score
example 1 1601	Forest	Woods	.95
	Forest	Field	.04
	Forest	Lake	.01
example 2 1602	Forest	Woods	.83
	Forest	Field	.14
	Forest	Lake	.03
example 3 1603	Water	Woods	.10
	Water	Field	.01
	Water	Lake	.89

(A) Query examples cross-classified using repository classifier

	Input label	Output label	Score
1604 example 1	Woods	Forest	.97
	Woods	Water	.03
1605 example 2	Woods	Forest	.89
	Woods	Water	.11
1606 example 3	Field	Forest	.67
	Field	Water	.33
1607 example 4	Lake	Forest	.05
	Lake	Water	.95

(B) Repository examples cross-classified using query classifier

FIG. 16

17/21
YOR9-2000-0205-US1

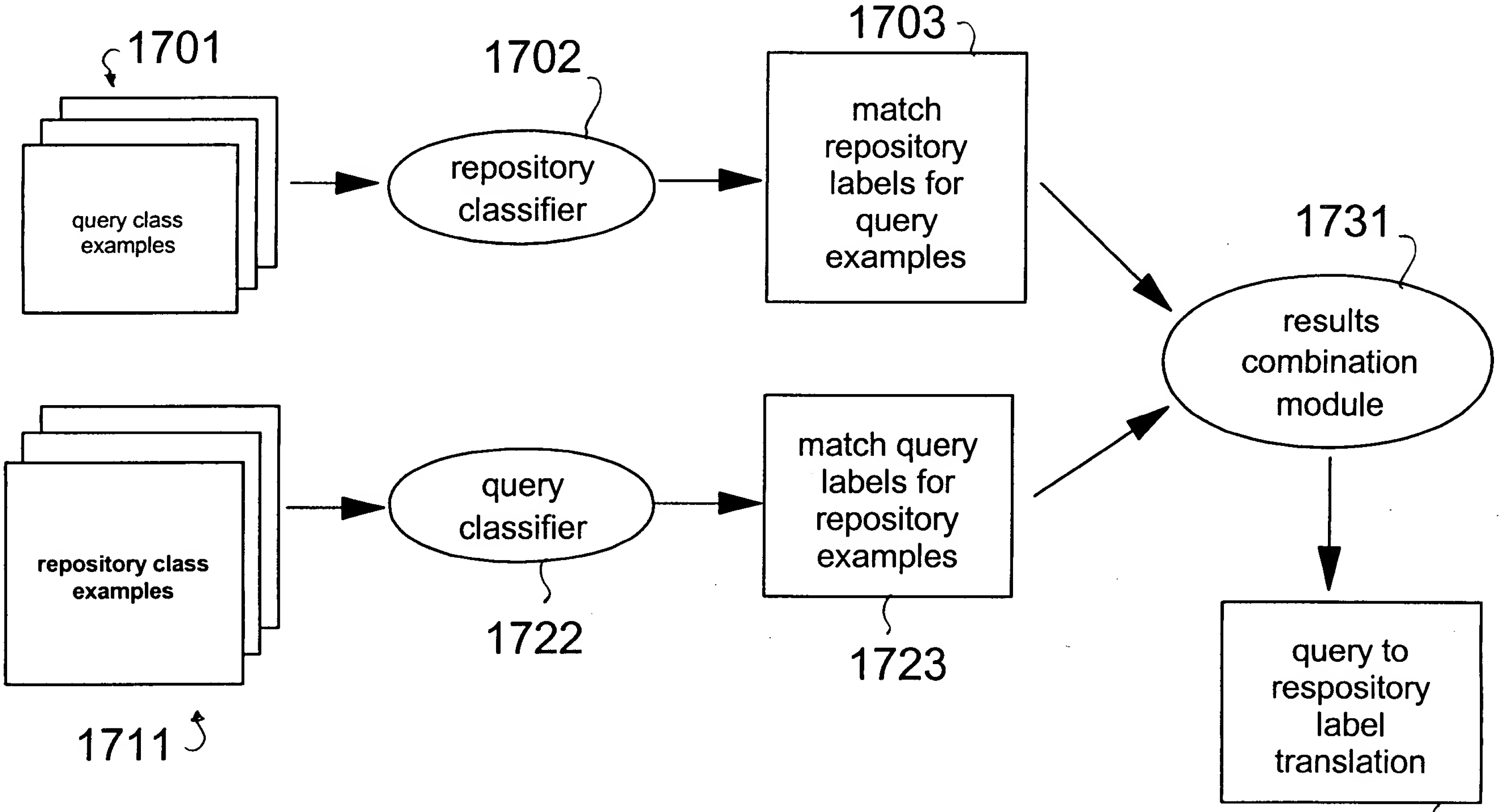


FIG. 17

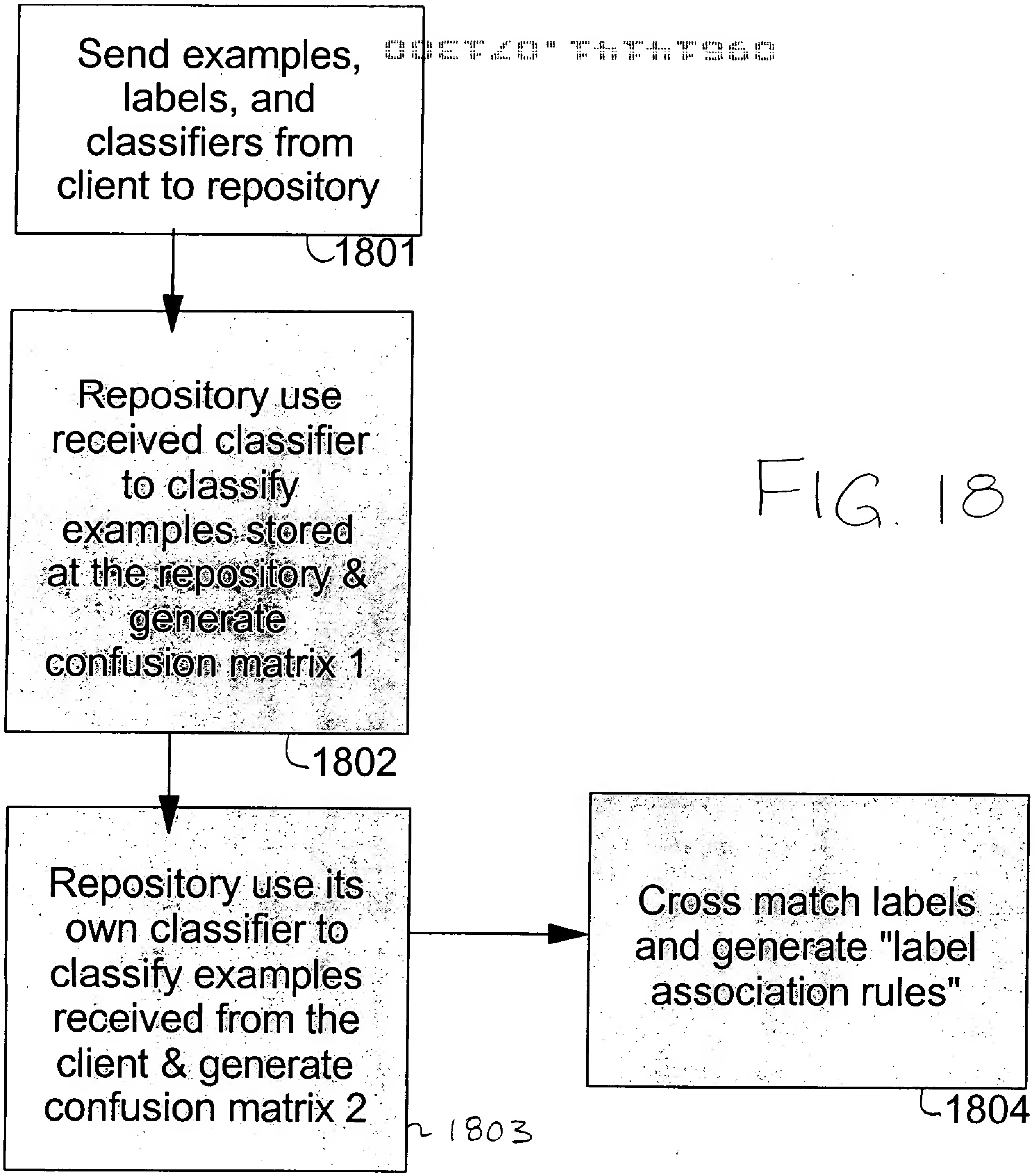

Send examples, labels, and classifiers from client to repository
1801
Repository use received classifier to classify examples stored at the repository & generate confusion matrix 1
1802
Repository use its own classifier to classify examples received from the client & generate confusion matrix 2
1803
Cross match labels and generate "label association rules"
1804

FIG. 18

19/21
YOR9-2000-0205-US1

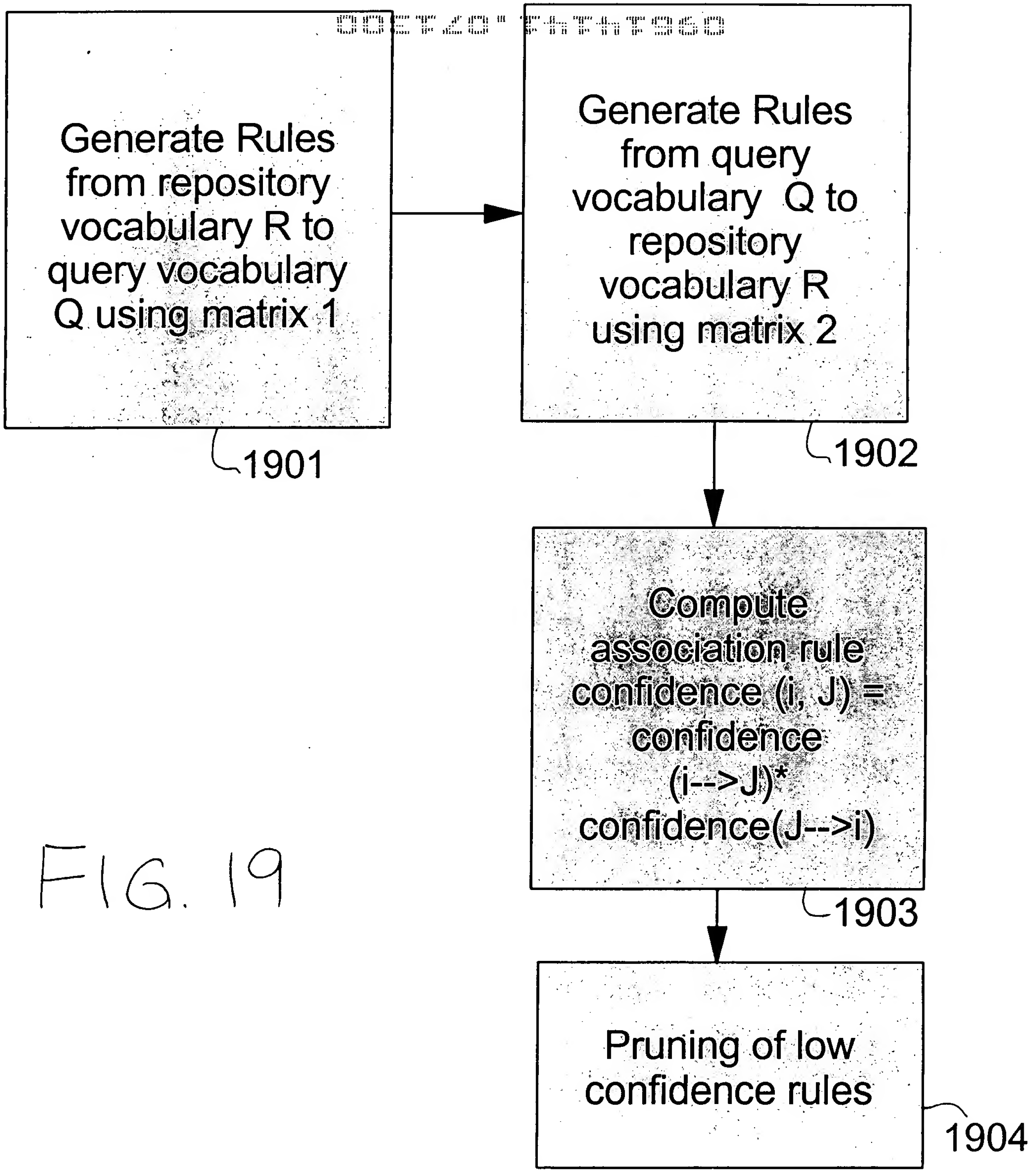


FIG. 19

20/21
YOR9-2000-0205-US

matrix 1 (R -->Q)

	A	B
1	0.75	0.15
2	0.35	0.25
3	0.25	0.65

matrix 2 (Q -->R)

	1	2	3
A	0.65	0.15	0.10
B	0.15	0.25	0.6

(1,A)	0.75*0.65	0.4875
(1,B)	0.15*0.15	0.0225
(2,A)	0.35*0.15	0.0525
(2,B)	0.25*0.25	0.0625
(3,A)	0.25*0.1	0.025
(3,B)	0.65*0.6	0.39

FIG. 20

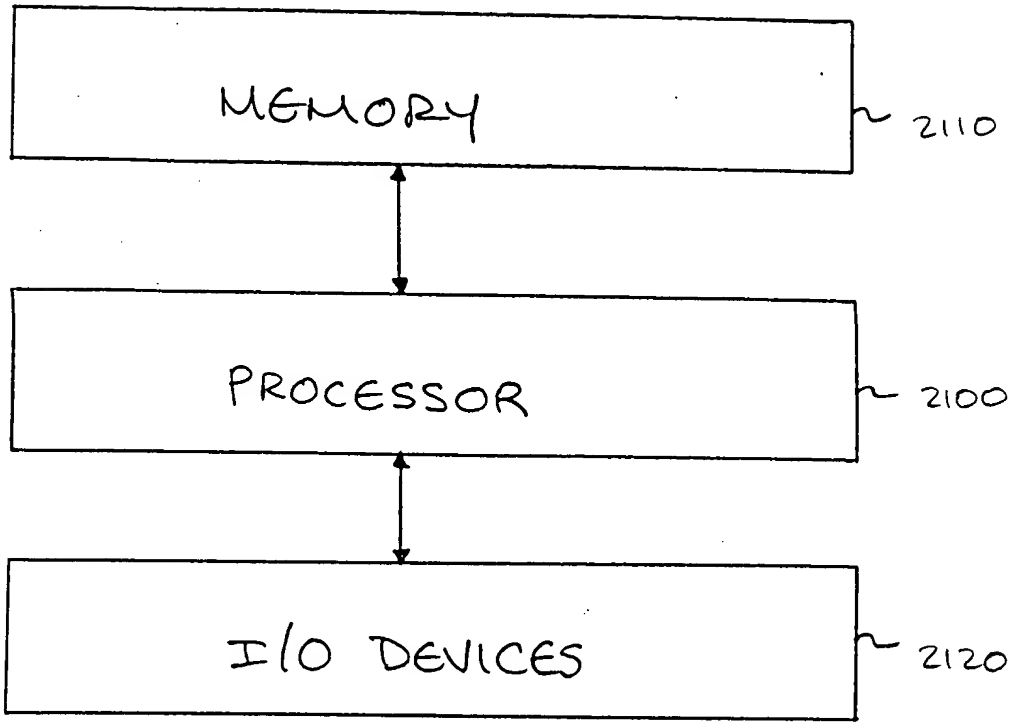


FIG. 21